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Report to Sen. Edmund S. Muskie, Chairman, Senate Committee on Budget; Sen. Henry Bellmon, Ranking Minority Member; by Elser B. Staats, Comptroller General.

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After the Congress authorizes a water resources study, the Bureau of Reclamation and the Corps of Engineers prepare reports on the economic and environmental feasibility of carrying out alternative solutions to the problem under study. The Water Resources Council, a policy and coordinating body, has established Principles and Standards for Planning Water and Related Land Resources. These guidelines require that at least two alternative plans be presented in each feasibility report, one stressing economic development and the other environmental enhancement. Both agencies have adopted internal regulations incorporating these principles and standards.

Findings/Conclusions: Bureau of Reclamation reports, particularly older ones, have not provided adequate information on alternatives. Current reports include more information but do not consistently address important issues, comply with current procedures, or contain comparable details on alternatives. Current procedures, along with proposed changes if properly implemented, should increase the amount of information and improve the consistency of data presented on alternatives. Corps of Engineers reports generally are well-organized and address alternatives but would provide a better basis for management decisions if: the organization and format of each report were standardized and consistently presented, more detailed information were presented for each alternative, and both advantages and disadvantages for each viable alternative were discussed. New draft agency regulations, when fully in use, should improve the agencies' presentation of project alternatives. The agencies should, in their procedures and regulations, classify their budgets according to mission needs

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and solicit proposals from other agencies and private industry when considering alternatives during feasibility studies.
(Author/SW)

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*UNITED STATES
GENERAL ACCOUNTING OFFICE*

**Improved Formulation And
Presentation Of Water Resources
Project Alternatives Provide A Basis
For Better Management Decisions**

After the Congress authorizes a water resources study, the Bureau of Reclamation and the Corps of Engineers prepare reports on the economic and environmental feasibility of carrying out alternative solutions to the problem under study.

More should be done by these agencies to provide a better basis for congressional decisions on the need for a particular project and the best alternative for meeting that need.

New draft agency regulations, when fully in use, should improve the agencies' presentation of project alternatives.



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-167941

The Honorable Edmund S. Muskie,
Chairman
The Honorable Henry Bellmon,
Ranking Minority Member
Committee on the Budget
United States Senate

In accordance with your August 5, 1977, request, this report discusses the Bureau of Reclamation and Corps of Engineers procedures and regulations concerning project feasibility studies and the presentation of alternatives for individual projects in the feasibility reports submitted by each agency to the Congress for authorization. This report responds to one main area of the request. As agreed with your office, reports addressing other areas of the request will follow.

At your request, we did not obtain written agency comments. The matters covered in the report, however, were discussed with both Bureau of Reclamation and Corps of Engineers officials, and their comments are incorporated where appropriate.

While we found some weaknesses in the feasibility reports reviewed, this report contains no recommendations because both the Bureau of Reclamation and the Corps of Engineers have already initiated actions which should improve the presentation of alternatives in future feasibility reports.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 7 days from the date of the report. At that time, we will send copies to appropriate Senate and House committees; the Acting Director, Office of Management and Budget; and the heads of departments and agencies directly involved.

A handwritten signature in black ink, appearing to read "Luther B. Smith".

Comptroller General
of the United States

D I G E S T

Bureau of Reclamation and Corps of Engineers water resources projects are authorized by the Congress. Before authorization, each agency prepares detailed feasibility reports assessing the water and related resources problems and needs in the area under study. These reports identify alternative solutions to the problems. However, their presentation can be improved by including more information on viable alternatives.

The Water Resources Council--a policy and coordinating body--has established Principles and Standards for Planning Water and Related Land Resources. These guidelines require that at least two alternative plans be presented in each feasibility report--one stressing economic development and the other environmental enhancement. Both agencies have adopted internal regulations incorporating these principles and standards. However, if Bureau and Corps reports better presented information on alternatives the Congress would have a better basis for choosing the best plan. (See p. 1.)

Bureau reports, particularly older ones, have not provided adequate information on alternatives. Their current ones do include more information but do not

- consistently address important issues,
- comply with current procedures, or
- contain comparable details on alternatives. (See p. 3.)

Current procedures, along with proposed changes if properly implemented, should increase the amount of information and improve the consistency of data presented on alternatives. (See p. 8.)

There are several additional factors not in Bureau reports and not specifically required by Bureau instructions that might help the committees evaluate the alternatives presented. For example, additional information concerning the degree and composition of public support and project beneficiaries could be developed. (See pp. 7 and 8.)

Corps reports generally are well-organized and address alternatives but would provide a better basis for management decisions if

- the organization and format of each report were standardized and consistently presented,
- more detailed information were presented for each alternative, and
- both advantages and disadvantages for each viable alternative were discussed (See pp. 11 and 12.)

Corps officials said that draft revisions to their regulations will require a standardized report format and equal treatment of alternative plans in feasibility reports.

GAO also reviewed several Corps summary statements for proposed projects which had been presented at congressional hearings. These statements addressed project alternatives but limited the discussion to about one paragraph. More detailed discussion of the advantages of each viable alternative along with its benefit cost could be useful to the committee (See p. 12.)

The Office of Management and Budget, in Circular A-109, provides guidance to Federal agencies in procuring and acquiring major systems. However, neither the Bureau nor the Corps has fully implemented this circular. To fully comply with circular requirements,

the agencies must, in their procedures and regulations, (1) classify their budgets according to mission needs and (2) solicit proposals from other agencies and private industry when considering alternatives during feasibility studies. These changes should increase the competition for developing solutions to a particular problem. (See pp. 15 to 17.)

As requested by the committee, GAO did not obtain formal agency comments, but matters in the report were discussed with agency officials and their views were considered where appropriate. They generally agreed with GAO's observations; however, Corps officials stressed that the full effect of proposed changes will only be realized as new feasibility studies are conducted from the beginning.

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ABBREVIATIONS

GAO	General Accounting Office
OMB	Office of Management and Budget

CHAPTER 1

INTRODUCTION

On August 5, 1977, the Chairman and Ranking Minority Member of the Senate Committee on the Budget requested that we study water resources programs, concentrating on those aspects that affect the authorization of individual projects. We agreed to present the results of our study to the Committee in a series of separate reports.

This report responds to one main area of the request. The Committee asked that we outline a procedure whereby the benefits and costs of alternatives to individual projects would be identified for authorizing committees. The request stated further that this information would make possible rigorous comparisons with the standard benefit-cost ratio analyses on water projects and provide for well-informed decisions as to the need for particular projects.

In subsequent meetings with the Committee, we agreed to limit our work to a review of Bureau of Reclamation and U.S. Army Corps of Engineers procedures and regulations concerning project authorization studies and a selective review of several reports they each submitted to the Congress for authorization and approval. We also agreed that, instead of outlining alternative procedures, we would comment on the procedures currently being used by both agencies.

REGULATIONS REQUIRE PROJECT ALTERNATIVES

After the Congress authorizes a study, the Bureau and the Corps follow internal regulations to prepare feasibility reports which identify and assess the water and related resources problems and needs in the area under study. These reports identify alternative solutions to the problem and address the economic and environmental feasibility of carrying them out. For example, alternative solutions to a flooding problem could include a dam, dikes, levies, or flood plain management.

Over the last several years, the multiobjective planning concept has evolved largely through the efforts of the U.S. Water Resources Council 1/, established in 1965 as a policy and

1/The Water Resources Council, established by the Water Resources Planning Act of 1965, as amended (42 U.S.C. 1962, et seq) consists of the Secretaries of the Interior; Agriculture; the Army; Commerce; Housing and Urban Development; Transportation; the Administrator of the Environmental Protection Agency; and the Chairman of the Federal Power Commission.

coordinating body. The Council's efforts reflect the changing public viewpoints which have shifted from an economic emphasis toward greater recognition of environmental and social values. In October 1973 the Council established "Principles and Standards for Planning Water and Related Land Resources." These standards require that at least two alternative plans be prepared for each proposed project. One plan stresses the enhancement of national economic development by increasing the value of the Nation's output of goods and services and improving national economic efficiency. The other plan stresses enhancement of the quality of the environment by the management, conservation, preservation, creation, restoration, or improvement of the quality of certain natural and cultural resources and ecological systems. The Council's principles and standards also require that each agency prepare a Final Environmental Statement in accordance with the National Environmental Policy Act of 1969. This statement is included as part of the feasibility report.

The Bureau and Corps have both adopted regulations incorporating the Council's standards governing, planning, conducting, and reporting on feasibility studies. A detailed discussion of these regulations as well as an analysis of the agencies' presentation of these alternatives is included in chapters two and three.

SCOPE OF REVIEW

Our review was made primarily at the Bureau's Engineering and Research Center, Denver, Colorado, and Corps headquarters, Washington, D.C. We examined pertinent Bureau and Corps procedures, guidelines, and regulations, and reviewed 11 project feasibility reports. (See app. II.) We also interviewed responsible officials of both agencies and obtained the views of staff members of the House and Senate authorizing committees.

As previously agreed with the committee, we limited the scope of our review to an evaluation of agency procedures and report format with a view toward evaluating the way each agency presents alternatives to the Congress at the project authorization stage.

CHAPTER 2

FORMULATION AND PRESENTATION OF PROJECT ALTERNATIVES

BY THE BUREAU

Current Bureau guidelines and reports provide more detailed information on formulating and presenting alternative means of accomplishing project objectives than older ones. However, we found that even the more recent reports do not consistently address important issues, comply with current procedures, or contain comparable details on alternatives.

The Bureau cooperates with other governmental entities in performing broad national and regional assessments of river basin plans.

The Bureau differentiates project investigations in terms of detail and subject matter and conducts three types of project investigations:

- Appraisal investigations are brief preliminary studies to determine the desirability of proceeding to a feasibility investigation.
- Feasibility investigations are detailed studies authorized by law which provide the basis for project authorization.
- Advance-planning studies are conducted after the project is authorized and before construction is initiated to assure that the project plan is current and technically adequate for proceeding with final design and construction.

The Assistant Commissioner for Resource Planning provides policy direction for the Bureau's water resources planning and supervises the activities of the Division of Planning in Washington, D.C., and the Division of Planning Coordination in Denver, Colorado.

Technical expertise at the Engineering and Research Center in Denver, Colorado, is provided to the regional directors through the Division of Planning Coordination. In turn, each regional director is responsible for Bureau planning in his geographical area. The regional planning officer is responsible to the regional director for the technical phases of each investigation and the preparation of planning reports. The regional director, at his discretion, may assign the specific appraisal, feasibility, or special investigations

and advance planning and preconstruction activities to a field-planning officer or a project manager.

NEW INSTRUCTIONS REQUIRE DETAILED PRESENTATION OF PROJECT ALTERNATIVES

The Bureau is finalizing a series of instructions on all technical aspects of project planning, including plan formulation and report preparation, coordination, and review. These instructions incorporate the principles and standards established by the Council. The Chief, Division of Planning Coordination, told us that although the instructions on plan formulation and report preparation and review have been completed and presently are being followed, they have not been formally approved. The completed instructions were forwarded for implementation to the Bureau's regional offices in December 1977. He said that once the remaining instructions are completed, the whole series of instructions will be formally issued on the same date.

Formulating alternatives according to the new instructions

In general, when there are competing demands for water resources use, the new instructions call for the development of at least two alternative plans. One plan must emphasize the national economic objective; the other, the environmental quality objective. Additional alternatives which represent a mix of these two objectives also may be formulated to achieve the best plan. The formulation of a single plan is allowed when the two objectives are complementary or noncompetitive.

The level of detail for individual alternatives should increase as the selective process of study attrition narrows to arrive at the final set of viable plans. However, the amount of detail should be comparable for each of the remaining feasible alternatives.

All the alternative plans, which are developed and carried through the complete planning process, are supposed to meet tests for acceptability, effectiveness, efficiency, and completeness.

Presenting alternatives according to the new instructions

Bureau instructions for presenting alternatives require that displays of the beneficial and adverse effects of each plan should provide the framework for evaluating

- the plan's effectiveness in meeting the objectives by comparing plan accomplishments with projected needs and indicating how successfully the plan meets those needs,
- the differences among the plans in terms of their contributions toward meeting area goals,
- the tradeoff between monetarily-measured alternatives and those which are not subject to dollar measurements, and
- the cost-allocation and cost-sharing requirements.

To facilitate comparison of alternatives, summaries of the major impacts should be prepared which bring together in one set of tables or exhibits, information on each plan evaluated, including

- information on the structural and nonstructural features,
- type and quantity of services provided,
- investment costs,
- operation, maintenance, and replacement costs,
- national economic development effects,
- regional development effects,
- environmental quality effects,
- social impacts,
- cost allocations, and
- repayment and cost-sharing aspects.

The final selection of a plan must be evaluated on its contribution to the multiobjectives and should not be based on an analysis of the most justified plan, within the viewpoint of a single objective. The social, environmental, and economic indicators should provide the means to evaluate plans to meet planning goals, and essentially, the selection should be the plan which best uses the resources available to meet the people's needs.

When there are major conflicts and competition among alternative uses of water and related land resources, two

or more plans may be formally recommended; for example, one recommendation for an economic objective and one for an environmental objective. However, usually only one plan is recommended.

CURRENT REPORTS PROVIDE MORE INFORMATION,
BUT IMPROVEMENTS ARE STILL NEEDED

The Bureau's recent reports include more information about project alternatives than prior reports. However, because the instructions are new, many of the reports we reviewed did not fully comply with the new procedures or provide information sufficient to provide an adequate comparison of the alternatives.

We reviewed six Bureau reports which were prepared for project authorizations between November 1963 and June 1976--two older feasibility reports, three recent feasibility reports, and a recent interim report.

The two older feasibility reports contained little information concerning alternatives to the recommended plan. One report did not discuss alternatives and the other contained a single page of narrative on alternatives. This narrative provided inadequate detail to permit a comparison of alternatives to the recommended plan.

The four recent reports contained greater information on alternatives but did not completely follow recent Bureau instructions and presented alternative information in varying degrees of detail. Only two of these reports presented an alternative meeting the national economic objectives and the environmental quality objective as required by the new Bureau instructions and the Council's standards. Both of these reports also presented additional alternatives, but only one measured each alternative against the criteria of acceptability, effectiveness, efficiency, and completeness as required by Bureau instructions. The two remaining reports did not provide this type of information.

Three of the four reports presented sufficient information about benefits and costs as well as environmental and social effects to allow comparison of project alternatives. Two of these reports displayed information on alternative benefits, costs, and other features in schedules and tables. The third report provided benefit-cost information only in the narrative, making comparison among alternatives more difficult.

ADDITIONAL INFORMATION MIGHT BE USEFUL TO AUTHORIZING COMMITTEES

Reports presented to authorizing committees should contain enough information for committees to evaluate the various alternatives for a proposed project and compare the advantages and disadvantages of each. Although the current Bureau reports we reviewed contained more of this type information than older reports, proposed Bureau procedures require additional information; therefore, inclusion of other information not addressed by the Bureau may be helpful.

During our review we identified several areas of consideration not included in the six reports examined or specifically required in proposed Bureau instructions. We think they would be beneficial to the authorizing committees when evaluating the various alternatives for a proposed project. They were discussed with officials from the Bureau and Corps, who commented on the practicability of including these in future feasibility reports. Those which Bureau officials felt had merit are discussed below. The Corps comments are discussed on page 12.

Impact on national policies

Various project alternatives can have a widely varying effect on national issues such as energy development and usage. Presenting alternative plans in a format which clearly indicates their impact on such issues would permit additional comparison of project alternatives. For example, whenever a project, such as agricultural irrigation, diverts water upstream from hydroelectric generation facilities and does not return it to the stream flow, downstream consumers lose an opportunity to use this water for power generation. Better comparisons could be made if each alternative plan showed opportunity costs, such as these power losses. Bureau officials agreed that this was a valid consideration which might be helpful if included in future reports.

Project beneficiaries

Because alternatives generally provide different solutions for a particular need, different individuals may benefit depending on which alternative is selected. Better information could be provided as to which segment of society may benefit from the project if beneficiaries were identified for each alternative. For example, the total number of beneficiaries and average increased yield per farm derived from the project could be identified for irrigation projects. Also, percentage of total project costs to be repaid by beneficiaries could be developed for each alternative.

Bureau officials agreed that this information could be provided for beneficiaries of either irrigation or municipal and industrial water projects but stated it might not be practical to develop this information for other projects such as those that generate hydroelectric power.

Public support

Bureau procedures include public involvement in the planning process, and its reports frequently discuss public support for proposed projects. However, another dimension would be provided if project proposals also identified the degree and composition of the support. For example, does the general public support the project or does the support emanate from a special interest group? The inclusion of these and any other important or unique elements in the presentation of project alternatives would provide additional information for Committee use in the authorization process. Bureau officials agreed that this would provide an additional basis for comparing alternatives.

BUREAU COMMENTS

Information concerning the Bureau was discussed with Bureau officials and their comments have been incorporated in the report. They generally agreed with the information presented and commented that the overall presentation was very fair.

CONCLUSIONS

Bureau feasibility reports, particularly older ones, have not provided adequate information on project alternatives. The current reports we reviewed included more information on alternatives but were inconsistent in the amount and type of information provided. Current procedures, along with proposed changes, when properly implemented, should increase the amount of information provided and improve the consistency of data presented on project alternatives. This should provide authorizing committees with a better basis for comparing alternative proposals.

CHAPTER 3

FORMULATION AND PRESENTATION OF PROJECT ALTERNATIVES

BY THE CORPS

Much thought, analysis, and work is undertaken before Corps water resources projects are authorized and built. Normally, these projects undergo steps, such as feasibility studies, and advanced engineering and design before construction is started. The Corps studies and reports on alternatives to recommended projects during the feasibility stage of project development.

Corps regulations provide guidance for formulation and presentation of feasibility reports in accordance with the Council's principles and standards. The feasibility reports we reviewed generally were consistent with Corps regulations. However, improvements could be made which would provide a better basis for management decisions. These are discussed in detail on page 11.

NEW REGULATIONS TO REQUIRE MORE INFORMATION ON ALTERNATIVES

Although existing regulations require that alternatives be addressed in project feasibility studies, new draft regulations would require more detailed information and a consistent presentation and format.

Feasibility studies are conducted by the Corps district offices and reviewed at Corps headquarters under guidance provided in integrated engineering regulations encompassing multiobjective planning for water and land resources. Two of these regulations--Formulation of Alternatives (task 2), ER 1105-2-230, November 10, 1975, and Organization and General Content of Feasibility Reports, ER 1105-2-402, December 3, 1973--deal specifically with the formulation and presentation of alternatives. A brief summary of these regulations is presented below.

The Formulation of Alternatives regulation requires that alternatives be (1) considered which were developed by other Federal agencies, States, and regional or local government agencies, (2) identified, which may satisfy the planning objectives, (3) categorized according to the planning objective(s) which they address, and (4) developed to determine if they are feasible. According to the regulation, alternative plans must be based on different sets of criteria. For example, the regulation calls for the formulation of at

least one plan which optimizes national economic development and one which emphasizes environmental quality. Other plans may be developed which represent a mix of these two objectives. The regulation also requires that all the alternative plans presented must be able to be fully implemented and feasible for selection.

The Organization and General Content of Feasibility Reports regulation provides guidance on report presentation. It requires that survey reports emphasize and present in detail only the data and analysis for the recommended plan. Proposed draft revisions to this regulation will place greater emphasis on the presentation of alternatives by requiring equal treatment of alternative plans in feasibility reports. Specifically, the draft regulation calls for the presentation of information on the final array of alternative plans comparable in enough detail to display the advantages and disadvantages of each alternative as well as the recommended project.

INTENSIVE MANAGEMENT AND TRAINING PROGRAMS SHOULD ASSIST IN IMPLEMENTING NEW REGULATIONS

Officials told us that the Corps has two programs which should assist district officials in consistently applying the regulations mentioned above--the Intensive Management Program and a regulation implementation training program.

The Intensive Management Program requires both the Office of the Chief of Engineers and Corps divisions to play a more extensive role in the monitoring and management of district survey studies. This includes annual meetings with field planning personnel to provide guidance and review program performance. Field staff surveys are relatively complex and are based on many local inputs and agreement. Consequently, resulting reports are not readily alterable at the headquarters level once they near the final stage of completion. In recognition of this, the Intensive Management Program provides for earlier review by higher authority at a time when it can be more effective. This review occurs during various stages of plan formulation when key decisions are being made concerning alternatives and the direction of the ensuing supportive planning effort.

The Corps' training program provides guidance on conducting feasibility studies according to applicable regulations. Corps officials told us 18 training sessions have been conducted and that about 750 headquarters and field staff have received this training.

IMPROVEMENTS CAN BE MADE IN PRESENTING ALTERNATIVES

We reviewed five Corps feasibility reports which were prepared between January 1973 and May 1977. The reports represented various types of proposed projects and were prepared in five different Corps divisions--New England, Ohio River, Missouri River, South Pacific, and North Pacific.

Although all the reports reviewed were generally well-organized and addressed alternatives to the recommended project, the presentations would have provided a better basis for management decisions if (1) the organization and format of each feasibility report were consistently presented, (2) more detailed information had been presented for each alternative (comparable to that provided for the recommended project), and (3) both advantages and disadvantages were discussed for each alternative and the recommended plan.

In addition to the feasibility reports, we reviewed several Corps summary statements for proposed projects which had been presented at congressional hearings. We found that these summary statements addressed project alternatives but limited the discussion to about one paragraph and did not provide benefit-cost analyses.

The number of alternatives included in each report and the manner in which they were organized and presented varied. One report presented nine alternatives while two others presented only three. All but one of the reports complied with the Council's standards which require a presentation of at least two alternative plans, one stressing national economic development and the other stressing environmental quality. However, the study which failed to comply with the Council's standards was prepared before these standards became effective. Three reports also presented at least one additional alternative which represented a mix of the Council's two objectives. Another report presented the alternatives in such a way that it was difficult to determine exactly how many were considered and whether those presented were actually alternatives or variations of the recommended plan.

Each report discussed alternatives to the Corps' recommended plan along with the associated benefit costs. However, none of the reports adequately presented information on alternatives to allow them to be seriously considered in lieu of the recommended plan. Most of the reports we reviewed presented the alternatives in the body of the report along with the reasons the recommended plan was selected. Detailed information on the recommended plan was then presented in one of the appendixes to the report. Comparable information was not included for alternative plans.

Although alternatives to the recommended plan were discussed in each study, the language describing the alternatives was generally negative, stressing the reasons they were not the best solution. In contrast, the language discussing the recommended plan was much more positive. Only one of the studies discussed the weaknesses of the recommended plan and only two studies stressed the strengths of project alternatives.

Authorizing committee staff members told us that because of time constraints before congressional hearings on proposed projects, they rely heavily on summary statements prepared by the Corps for these hearings. One of the committee staff members said that a two-page summary of alternatives would assist the committee in deciding whether a project should be approved.

We reviewed the summary statements prepared by the Corps for four such hearings and found that although alternatives were discussed in each instance, they generally were limited to about one paragraph and the benefit costs of the alternatives were not presented.

CORPS COMMENTS ON USEFULNESS OF ADDITIONAL INFORMATION

During our review of the Bureau's procedures and feasibility reports, we identified several additional areas of consideration, not presently included in Bureau procedures or reports, that we thought might be beneficial to the authorizing committees when evaluating various alternatives for a proposed project. (See p. 7.) These also were discussed with the Corps to obtain their comments on the practicability of including this type of information in future feasibility reports.

Corps officials agreed that the three additional considerations discussed with the Bureau--impact on national policies, project beneficiaries, and public support--had merit and might be useful to the authorizing committees in future feasibility reports. Specifically, they stated that the Corps is stressing public involvement and that the trend in future reports will be toward providing more information on public support for various alternatives. They also said that additional information concerning project beneficiaries might be useful to the authorizing committees when comparing project alternatives.

CONCLUSIONS AND AGENCY COMMENTS

Although each of the Corps reports we reviewed were generally well-organized and addressed several project alternatives, the presentation of alternatives could be improved.

A standardized format for the presentation of alternatives would make it easier to compare and analyze the various alternatives and provide a better basis for well-informed decisions as to the need for a particular project and the best alternative to meet that need. Corps officials told us that a new draft regulation will require a standardized report format.

If authorizing committees are to have a better basis for determining whether a project should be authorized and which alternative should be selected, more detailed information on each of the alternatives is needed. Thus, it is important that the strengths and weaknesses of each alternative be discussed objectively to enable the authorizing committees to compare them better. Corps officials told us that draft revisions to the regulation on organization and general content of feasibility reports require equal treatment of alternative plans. Specifically, the draft regulation requires that the presentation of information on the final array of alternative plans be comparable in detail, discussing the advantages and disadvantages of each alternative.

Our review of congressional hearing summary statements showed that information on alternatives was limited to about one paragraph. An expansion of these summary statements to include a more detailed discussion of the advantages and disadvantages of each viable alternative along with benefit-cost information could be useful to the committees in deciding on the best solution. Corps officials agreed and said that if the committees requested such information, they would be happy to provide it.

In summary, Corps officials said that new regulations have been drafted which standardize the report format and require equal treatment of alternatives. They said they believe that guidance provided in current regulations along with the proposed changes will result in a more thorough evaluation and presentation of alternatives in future feasibility reports. However, they stressed that there will likely be some lag between these changes and publication of reports prepared under the new guidelines because studies take years to complete, and the full effect of the changes will only be realized as new surveys are conducted from the beginning under the revised regulations.

CHAPTER 4

APPLICATION OF OMB CIRCULAR A-109 AS A

MEANS OF IMPROVING BUREAU AND CORPS

PRESENTATIONS OF PROJECT ALTERNATIVES

On April 5, 1976, the Office of Management and Budget (OMB) issued OMB Circular A-109, providing policy guidance to Federal agencies in the procurement and acquisition of major systems. OMB's basic intent under A-109 is to (1) initiate new starts for major system acquisitions on the basis of agency statements of mission needs which have been approved by the agency head and (2) competitively explore alternate system design concepts of meeting these needs. Additionally, the circular stresses the importance of maintaining competition as far into the acquisition process as it remains economically beneficial. 1/

The agency statements of mission needs required under A-109 provide an analysis of the agency's missions. Agency missions are defined by the Comptroller General of the United States in Terms Used in the Budgetary Process, July 1977, as:

"* * * those responsibilities for meeting national needs assigned to a specific agency. Agency missions are expressed in terms of the purpose to be served by the programs authorized to carry out functions or subfunctions which, by law, are the responsibility of that agency and its component organizations."

The statements of mission needs are to be prepared whenever the agency's analysis of its mission identifies either a deficiency in existing agency capabilities or an opportunity to establish new capabilities in response to a technologically feasible opportunity. According to OMB, the components of the mission-need statement include the mission purpose, capability, agency components involved, time constraints,

1/A more detailed explanation of the mission budgeting concept and OMB Circular A-109 is presented in (1) OMB's pamphlet, "Major System Acquisitions, A Discussion of the Application of OMB Circular No. A-109," August 1976 and (2) our report to the Congress, "Mission Budgeting: Discussion and Illustration of the Concept in Research and Development Programs" (PSAD-77-124, July 27, 1977).

worth or value of meeting the need, relative priority, and the operating constraints. However, the means by which the mission need is to be satisfied is not to be expressed in these statements.

As a result of implementing A-109, the Bureau and the Corps will be required to make two primary policy changes, both during the early project stage. The first change will require each agency to make a mission analysis of its resources and reflect this analysis through a budget presentation. Although A-109 alone does not require Federal agencies to adopt mission budgeting, it does carry out the provisions of section 601(i) of the Congressional Budget Act of 1974 which requires that beginning with fiscal year 1979, the agency's budget should be presented in terms of agency roles, missions, and programs in addition to traditional methods of budget presentation. The second policy change will require both agencies to increase their consideration of alternatives by soliciting alternative concepts from Federal agencies and private industry to insure that all feasible solutions are considered. The effect of these changes in policy are discussed below.

The first change will require each agency to present its budget according to the mission needs of the agency. The actual budget categories will identify specific mission needs for which funding may be directed. This approach to budget presentation should enable the Congress to make better decisions when establishing budget priorities. It provides the Congress with more clearcut information concerning each agency's needs and focuses attention on those needs early in the acquisition process before project alternatives are pursued and major resources committed. The Congress will then have the opportunity to fund mission needs at the earliest possible stages, before the commitment of agency resources or the development of alternatives. OMB views this early involvement by the Congress as a major improvement over past practices. It believes that the possibility for spending vast funds on a mission without congressional awareness would be virtually eliminated with this change.

The second area of policy change under A-109 calls for competition during the early project stages. This change is also compatible with the mission budgeting concept because it requires the competitive development of alternative solutions to resolve the mission need during the early stages of the project. A major benefit of this approach would be the increased competitiveness from the A-109 requirement

that alternative concepts should be solicited from a wide range of sources. Although the agency charged with fulfilling a mission may consider alternatives originating from the agency's own inhouse capability, A-109 requires that the selection of an alternative be made by the agency head.

BUREAU'S APPROACH TO A-109

The Bureau has not adopted or implemented the provisions of Circular A-109 because the Department of the Interior's official position is that A-109 does not apply to its programs. Projects and programs of the agencies, within the Interior, conceived and authorized by present procedures, are specifically defined by law and are usually initiated by the Congress. However, before the Congress authorizes any major construction project for the Interior, the Interior makes a determination of the most economical and advantageous method of accomplishing the program through the preparation of feasibility studies. The Interior believes that these studies exceed the requirements of A-109. After the completion of these feasibility studies, the Congress decides whether to authorize the commencement of work and this authorization is made on a specific project-by-project basis.

The Interior stressed the significance of the fact that it has been years since it has actually proposed the initiation of construction on a new project. Therefore, due to the manner in which its projects are authorized and also because of the feasibility studies it has prepared, Interior officials do not believe that additional measures should be required of them under A-109.

OMB, on the other hand, believes that A-109 does apply to the Department of the Interior and its components. On December 16, 1977, OMB sent a letter to the Secretary of the Interior which said that OMB believed the Interior could realize significant benefits through implementation of A-109 and suggested that further discussions be held. OMB officials told us that, if necessary, they will require the Interior to comply with these provisions.

CORPS' APPROACH TO A-109

Other than to designate an official responsible for implementation of A-109 provisions, the Corps has done little toward specifically implementing the circular's provisions. However, officials maintain that current regulations governing the planning, design, and construction of major water resources systems are consistent with the acquisition approach

called for in A-109. They said that future efforts in implementing A-109 will focus on identifying additional opportunities within the civil works program to solicit alternative design proposals.

CONCLUSIONS

When A-109 is fully implemented by the Bureau and the Corps, changes will have to be made to their existing regulations and procedures. Both agencies will have to solicit alternative system design concepts from private industry and other agencies, as well as independently develop their own. This will be required at the earliest stages of the feasibility study for each project.

After OMB approves the Bureau's and the Corps' A-109 implementing policies, both agencies will begin developing their own mission need statements. These statements will be furnished to the Congress in support of funding requests for the purpose of soliciting alternative design concepts. However, because the acquisition of major systems in the Federal Government is a lengthy process, it will probably be several years before the complete effects of A-109 are known.

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United States Senate

COMMITTEE ON THE BUDGET

WASHINGTON, D.C. 20510

August 5, 1977

JOHN T. MC EVOY, STAFF DIRECTOR
ROBERT S. BOTO, SENIORITY STAFF DIRECTOR

The Honorable Elmer B. Staats
Comptroller General
General Accounting Office
411 G. Street N.W.
Washington, D.C. 20548

Dear Elmer:

We are requesting that a study of certain aspects of water resources programs be conducted by your office for the Senate Budget Committee. This study will center on those aspects of water resources programs that affect the authorization of individual projects. Results of the study should be presented to the Committee in a series of separate reports.

Water is a limited resource. Where it is scarce, development of any kind is limited drastically. Careful allocation and wise, conservative use of our remaining water resources are becoming more and more critical as our population expands and our supplies of fresh water are depleted.

Moreover, our water resources programs bear closer scrutiny from an economic standpoint. The Administration recently has raised questions concerning the documentation of need, the accuracy of benefit-cost ratio analyses, and the enormous cost overruns that have occurred in some water projects. Congress and the Administration agree on the need for a water resources program which promotes prudent fiscal policy and careful resource planning.

To enable Congress to set national spending priorities and accordingly to direct and control water resources programs, all pertinent information pertaining to water projects authorizations must be accurately presented to the committees involved. To provide a complete picture, alternatives to projects and their associated costs must be delineated. Also, Congress sorely needs better information on costs at the time of project authorization and during construction for predictive purposes. Committees should be notified as estimated costs change during construction, so that projects can be reevaluated on a regular basis.

We wish to see the GAO study directed to four main areas elaborated upon here:

1. Benefit-cost ratio analysis

(a) A procedure should be outlined whereby the benefits and costs of alternatives to individual projects are identified for authorizing committees. These data would make possible rigorous comparisons with the standard benefit-cost ratio analyses on water projects and provide for well-informed decisions as to the need for particular projects.

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(b) The general methodology of benefit-cost ratio analysis as carried out by the Corps of Engineers and the Bureau of Reclamation should be investigated. Particular emphasis should be directed to identification of questionable benefits such as area redevelopment, enhancement of project values, recreation values, and fish and wildlife enhancement. These types of benefits deserve special consideration, for by pushing benefit-cost ratios above unity, they can make projects appear economically sound. As examples, projects in varying stages of completion should be examined to find if the validity of benefits claimed at project authorization can be reaffirmed during and after construction.

(c) The use of probability analysis in the calculation of benefits for water resources projects should be reviewed. For example, for a flood control project, is the probability of the flood occurring during the life of the project used to calculate benefits or is the flood assumed to be a certainty? Similarly, are probabilities assigned to such variables as local population growth projections? Data on the effects of probability analysis on benefit-cost ratios and determination of the most realistic method of calculating the value of benefits should result.

2. Cost projections

(a) The accuracy of the estimated costs in authorization bills for water resources projects should be evaluated. Alternative methods of cost estimation should be suggested that would permit increased accuracy at the time of project authorization. We recognize that GAO has investigated cost indexing during project construction by the Bureau of Reclamation. Similar analyses should be done for the Corps of Engineers. Suggested means of monitoring intra-agency cost estimation and cost indexing should be made.

(b) Alternative procedures for funding projects leading to closer regulation by authorizing committees should be determined. The effectiveness of cost ceilings on Bureau of Reclamation projects should be evaluated, and recommendations concerning similar treatment of Corps of Engineers projects should be made. The impact of requiring re-authorization of Corps projects when the estimated cost is exceeded should be included. Regulation of spendout rates by authorizing projects in steps (as in the Phase I stage of Corps projects) should be studied.

(c) A determination of the total number of authorized projects and the estimated remaining cost of these should be made. The proportion of these for which funds have not been appropriated, current methods of project deauthorization, and new suggestions for deauthorization should be determined.

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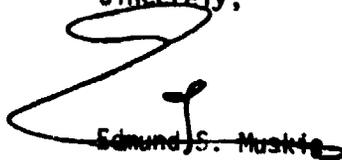
3. Efficiency of project construction. The GAO should investigate the rates at which projects should be constructed such that the resources of a particular agency are best utilized and the real costs are kept at a minimum.

4. Individual project authorization. The study should include an analysis of general options for continuing authorizations of individual water resources projects. It may be that benefits to the nation can be maximized through authorization of general water resources development plans rather than through individual project authorizations. Alternative plans should be identified and their merits reviewed.

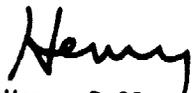
All sections of this study should be completed and transmitted to the Budget Committee by October 1, 1978. We have chosen this rather lengthy time frame for two reasons. First, a very detailed, in-depth analysis of the more complicated parts of this study should be possible in this time period. Second, it will allow the GAO to incorporate the recommendations and revisions resulting from President Carter's review of national water resources policy (to be completed November 1) in the study, and to evaluate these formally. We believe, however, that some parts of the study could be completed well before the final deadline. Therefore, we are requesting that your staff meet with Brenda Tremper of the Senate Budget Committee staff to schedule completion of draft and final versions of a series of separate reports on these issues.

With best wishes, we are

Sincerely,



Edmund S. Muskie



Henry Bellmon

PROJECT REPORTS REVIEWED BY GAO

BUREAU:

Dolores Project, Feasibility Report, November 1963

Mirage Flats Project, Feasibility Report, December 1965

Kanopolis Unit, Feasibility Report, March 1975

Mogollon Mesa Project, Feasibility Report, January 1975

Sioux Falls Unit, Feasibility Report, August 1975

McGee Creek Project, Interim Feasibility Report, June
1976

CORPS:

Hay Creek-Birdsboro Schuylkill River Basin, Pennsylvania,
Interim Feasibility Report, January 1973

Santa Anna River Main Stem including Santiago Creek and
Oak Street Drain, Feasibility Report, December 1975

Jonesport Harbor, Maine, Feasibility Report, April 1976

Park River Subbasin, North Dakota, Feasibility Report,
September 1976

Upper Baker Project, Skagit River Basin, Washington,
Feasibility Report, May 1977